9 July 1997

PROCEEDINGS OF THE BIOLOGICAL SOCIETY OF WASHINGTON
110(2):236–241. 1997.

Nanomysis philippinensis, a new species (Crustacea: Mysidacea) from brackish waters of the Philippines

Masaaki Murano

Institute of Environmental Ecology, METOCEAN Co. Ltd.,
Riemon 1334-5, Ooigawa-cho, Shida-gun, Shizuoka 421-02, Japan

Abstract.—A new species, *Nanomysis philippinensis,* is described based on specimens from the Philippines. *N. philippinensis* is easily distinguished from the two known species of the genus, *N. siamensis* and *N. insularis,* by the numbers of setae on the first segment of the exopods of the male third and fourth pleopods, the shape and the marginal spine number of the telson, and the size of body.

Specimens of a new species of *Nanomysis* were found in plankton samples collected with a scoop net at a cove in Panay Island, the Philippines and in those stored at the Southeastern Asian Fisheries Development Center (SEAFDEC) in Iloilo of the same island. In this paper, the description of the new species is given. The type specimens are deposited in the National Science Museum, Tokyo (NSMT).

Genus *Nanomysis* Tattersall, 1921

Nanomysis Tattersall, 1921: 408–409.—Ii, 1964: 426.

Diagnosis.—Carapace fringed with spinules on anterior margin.

First, second and fifth pleopods of male rudimentary, unjointed and of the same form as those in female. Third pleopod of male biramous with unjointed inner ramous and 3-jointed outer ramous; outer ramous longer than inner, third joint terminating in single strong seta. Fourth pleopod of male biramous; inner ramous unjointed; outer ramous very long, 4-jointed, penultimate joint with long seta, ultimate joint short, terminating in 2 long, slender setae.

Antennal scale narrowly lanceolate, 2-jointed, setose along entire margin, with apical part narrow but not pointed.

Carpopropodus of endopods of third to eighth thoracic limbs 3- or 4-jointed.

Endopod of uropod without spines on inner margin.

Telson short; posterior margin convex, straight or concave, not split, armed with a comb of spines between last lateral spines; lateral margins armed with spines.

Type species.—*Nanomysis siamensis* Tattersall, 1921.

Remarks.—The original diagnosis of the genus was given by Tattersall (1921) when the genus was established for *Nanomysis siamensis* and amended by Ii (1964) who took into account the description of the second species, *Nanomysis insularis,* described by Nouvel (1957). With the addition of the present new species, the generic diagnosis is modified again as mentioned above. Modifications are made in three points, the addition of character in the anterior margin of the carapace, the number of subsegments in the carpopropodus of thoracic endopods, and the shape of the posterior margin of the telson.

Nanomysis philippinensis, new species
Figs. 1, 2

Type material.—Holotype (NSMT-Cr 11912), adult female with embryos, 3.2 mm; allotype (NSMT-Cr 11913), adult

male, 2.6 mm; paratypes (NSMT-Cr 11914), 5 adult females with embryos (2.8–3.0 mm) and 8 adult males (2.1–3.0 mm); Batan Bay, Panay Island, Philippines, 1 Dec 1979 collected with scoop net above eel grass bed at depth of about 1 m.

Other material.—Two adult females with embryos (3.0, 3.1 mm), 7 adult males (2.2–2.9 mm) and 1 immature male, Hamtik, Panay Is., 5 Apr 1976, 5 m deep, CM net (75 cm in diameter, 0.49 mm in mesh size); 2 immature females and 1 juvenile, off Negros Occidental School of Fisheries, Negros Is., Philippines, 28 Jun 1976, plankton net tow, 1 juvenile (1.4 mm), Oton Beach, Panay Is., 25 Aug 1976, plankton net tow; 10 immature females (up to 2.5 mm) and 4 immature males (up to 1.9 mm), same as type specimens; 3 adult females (2 with embryos) (2.9–3.2 mm), 11 adult males (2.2–2.8 mm), 11 immature females (up to 2.8 mm) and 3 immature males, mouth of Altavas River, Banga Cove, Batan, Panay Is., 2 Dec 1979.

Body length.—Adult female 2.8–3.2 mm, adult male 2.1–2.9 mm.

Description.—Carapace slightly produced into broadly rounded rostrum, frontal margin fringed with about 60 tiny spinules throughout (Fig. 1B); anterolateral corners rounded; posterior margin emarginate, leaving last thoracic somite exposed (Fig. 1A).

Eye large; cornea globular, slightly broader than eyestalk; eyestalk without papilliform process (Fig. 1B).

Antennular peduncle of female: first segment as long as following 2 segments together, armed at outer distal corner with several setae, one of which is plumose, longer and directed backward; second segment connecting obliquely with third segment, with single plumose seta at median distal corner; third segment with plumose seta at median distal corner (Fig. 1A, C). Antennular peduncle of male: more robust than that of female, first segment as long as third, third segment with processus masculinus small (Fig. 1B).

Antennal scale slender, lanceolate, extending beyond distal margin of antennular peduncle for ⅓ of its length in female and ¼ in male, 5 times as long as greatest width, setose all round, distal suture marked off at distal $\frac{2}{9}$, distal segment more than 3 times as long as broad (Fig. 1D). Antennal peduncle more than half as long as scale, second segment longest, occupying about half of peduncle length (Fig. 1D). Antennal sympod with strong spinelike process at outer distal corner (Fig. 1D).

Mandibular palp relatively small, sparsely setose, second segment armed on external margin with 7 setae of which distal one differs slightly in shape from others, third segment about half as long as second, armed with 8 barbed setae arranged regularly on distal ⅔ of external margin (Fig. 1E). Coxa of mandibles as shown in Fig. 1F. Maxillule: outer lobe armed with 9 strong spines on distal margin and 3 thick setae on inner surface; inner lobe armed with 3 stout and one slender setae on apex, 2 setae on inner margin and 3 setae on outer margin (Fig. 1G). Maxilla: exopod small and slender, 3 times as long as broad, with only 2 setae, one at apex plumose, long and thick, the other on subapex of outer margin short, margin of exopod fringed with fine hairs; terminal segment of endopod oval, 1.2 times longer than broad (Fig. 1H).

Endopod of first thoracopod robust; endite of basis large, armed with 4 to 5 thick and hairy setae on inner margin and apex; preischium with 3 to 4 similar setae on inner margin (Fig. 1I). Endopod of second thoracopod robust; ischium fused with preischium, merus equal to combined length of carpopropodus and dactylus, carpopropodus becoming broader distally, twice as long as maximum breadth at distal end; dactylus broader than long, bearing 5 strong barbed setae in addition to slender setae (Fig. 1J). Endopods of third to eighth thoracic limbs becoming more slender towards posterior pairs; dactylus small, half length of slender terminal claw; in third to seventh pairs carpopropodus divided into 3 subjoints of which the middle is shortest

9 July 1997
PROCEEDINGS OF THE BIOLOGICAL SOCIETY OF WASHINGTON
110(2):227–235. 1997.

New records of the genus *Hansenomysis* in Japan with description of a new species (Crustacea: Mysidacea: Petalophthalmidae)

Manuel Rafael Bravo and Masaaki Murano

(MRB) Tokyo University of Fisheries, Department of Aquatic Biosciences, 4-5-7 Konan, Minato-ku, Tokyo 108, Japan;
(MM) Institute of Environmental Ecology, METOCEAN Co. Ltd., Riemon 1334-5, Ooigawa-cho, Shida-gun, Shizuoka 421-02, Japan

Abstract.—A new species, *Hansenomysis japonica,* and a species tentatively identified as ?*Hansenomysis lucifugus* (Faxon, 1893), of the mysid family Petalophthalmidae, were collected from Japanese waters. *Hansenomysis japonica* is clearly distinguishable from the nearest species of the genus, *H. violacea* (Birstein & Tchindonova, 1958), by the long acute horns of the eyeplate, the narrower antennal scale, the segmented carpopropodus of the endopod of the eighth thoracopod, and the longer and narrower telson. The new species is the fifth described species of *Hansenomysis* in the Pacific Ocean. ?*Hansenomysis lucifugus* has not previously been recorded from Japan and western Pacific, if the identification is correct. A key to the species of *Hansenomysis* is also included.

The genus *Hansenomysis* was established by Hansen in 1887, under the name *Arctomysis,* to incorporate *A. fyllae* collected southwest of Greenland. However, *Arctomysis* was already allocated to a different species (Czerniavsky 1883), and Stebbing (1893) changed the name to *Hansenomysis.* Since the establishment of the genus, the classification of its species has experienced notable changes. *Hansenomysis lucifugus* and *H. violacea,* were initially described as the two only species of the genus *Scolophthalmus.* Birstein & Tchindonova (1970) transferred these two species of *Scolophthalmus* to *Hansenomysis.* Later, Murano & Krygier (1985) transferred five *Hansenomysis* species to *Bacescomysis,* which was established by them for *B. pacifica,* based mainly on the exopod of uropod which is a 2-segmented plate in the former genus, but unjointed in the latter. The most recent species of *Hansenomysis, H. carinata,* was described by Casanova (1993) for a single male specimen from the New Caledonian area.

Presently, the genus *Hansenomysis* consists of 15 species. The new species, *Hansenomysis japonica,* is the 16th species of the genus. ?*Hansenomysis lucifugus,* is reported for the first time from Japan and the western Pacific. Table 1 shows the latitudinal occurrence, the adult body length, and the habitat of each species of *Hansenomysis.*

The type specimens of *H. japonica* are deposited in the National Science Museum, Tokyo (NSMT).

Order Mysidacea Boas, 1883
Suborder Petalophthalmida Tchindonova, 1981
Family Petalophthalmidae Czerniavsky, 1882
Genus *Hansenomysis* Stebbing, 1893

Arctomysis.—Hansen, 1887:210.
Scolophthalmus.—Faxon, 1893:219; 1895: 224–226.

Diagnosis.—Carapace very short. Eyes fused in single plate, without visual pig-

Table 1.—Latitude (n°), adult body length (mm), and habitat or depth (m) of the species of *Hansenomysis* Stebbing, 1893 (Mauchline & Murano 1977, Lagardère 1983, Casanova 1993).

Species	Latitude	Body length	Habitat/depth	Occurrence
H. angusticauda O. S. Tattersall, 1961	75S	>26	mesopelagic	Ross Sea, Palmer Archipelago
H. antarctica Holt & Tattersall, 1906	53S–76S	20–23	100–400	Antarctic
H. armata Birstein & Tchindonova, 1958	50N–35N	13	2960	Kurile-Kamchatka Trench
H. carinata J.-P. Casanova, 1993	23S		950–1000	New Caledonia
H. chini Băcescu, 1971	8S	>12	2000	Peru Trench
H. falklandica O. S. Tattersall, 1955	50S–53S	12–15	200–400	Southern Oceans
H. fyllae (Hansen, 1887)	70N–40N	16–17	150–1500	North Atlantic
H. japonica new species	35N	12	590	Japan
H. lucifugus (Faxon, 1893)	?35N–0	42	?742–2000	Off Galapagos, ?Japan
H. menziesi Băcescu, 1971	8S	22	2000	Peru Trench
H. nouveli Lagardère, 1983	56N–44N	14–18	1913–2498	Bay of Biscay
H. pseudofyllae Lagardère, 1983	48N–44N	14.4	1950–4829	Bay of Biscay
H. rostrata Birstein & Tchindonova, 1970	44N	32–35	bathypelagic	Kurile-Kamchatka Trench
H. spenceri Băcescu, 1971	8S	17	2000	Peru Trench
H. tropicalis Băcescu, 1967	8S	>8	2000	Peru Trench
H. violacea (Birstein & Tchindonova, 1958)	43N	19	bathypelagic	Kurile-Kamchatka Trench

ments or with small pigmented area. Dorsal surface of proximal region of antennular peduncle having what is identified as a sensorial organ called the "Tattersall organ" (Băcescu 1971). Antennal scale lanceolate with spines and setae. Maxilla and maxillule normal. First and 2nd thoracopods robust; endopods of 3rd–5th thoracopods slender, with chelate structure terminally; endopods of 6th–8th thoracopods slender with dactylus and nail together forming long slender claw. Pleopods of female uniramous; 1st–4th pleopods unsegmented; 5th pleopod longest, 2 or 3-segmented. Pleopods of male biramous; 1st with endopod unsegmented, exopod segmented; 2nd pleopod with exopod segmented and modified, endopod segmented. Endopod of uropod 2-segmented, without spines on its inner margin; exopod of uropod 2-segmented, proximal segment with spines on outer margin. Telson elongate, entire, without plumose setae on apex, posterior part of the lateral margins armed with long strong spines separated by groups of short spines.

Type species.—*Hansenomysis fyllae* (Hansen, 1887)

Hansenomysis japonica, new species
Figs. 1, 2, 3A–D

Type specimens.—Holotype (NSMT-Cr 11910), adult male 12.0 mm; paratype (NSMT-Cr 11911), juvenile 8.8 mm; 17 Oct 1990, Sagami Bay (35°09.0′N, 139°24.6′E), 590 m, sledge net.

Description of male.—Body robust, elongate. Carapace without spines, covering laterally part of 7th thoracic somite, and dorsally all but 6th–8th somites; anterior margin broadly rounded without rostral projection, leaving fused eyes uncovered (Fig. 1A); anterolateral corner sharply pointed.

Eyes fused in single plate with 2 acute median horns, outer margin undulated. Eyeplate with 2 fused rounded bulks of visual pigments away from eyeplate margin (Fig. 1A).

Antennular peduncle robust; first segment longest, basal dorsal surface with well-developed Tattersall organ (Fig. 1A),

2nd segment a
dorsal view, sl
1B), with blunt
distal outer cor
bust, clearly s
each subsegme
gin armed with
1B).

Antennal sca
as long as the
beyond distal
for 0.75 of its
cept for proxi
Outer distal ed
spines that gr
(Fig. 1C). Ped
scale but consi
nular peduncle,
very short, 3rd
of 2nd. Sympo
scale (Fig. 1C).

Mandible wi
palp large and
segment shorte
as long as 3rd
rical, pentagona
frontal spinifor
lule with 7 spin
These spines b
gins. Inner lobe
and plumose (F
segment of en
densely setose
setose on outer
with 4 setae on
with 26 setae o

First thoraco
out exopod; end
and dactylus, is
podus similar i
long plumose s
popropodus bea
spine on inner
mose spines on
5 shorter plumo
preischium and
but not spines
Second thoraco
spine on outer

2nd segment about same length as 3rd in dorsal view, shorter in ventral view (Fig. 1B), with blunt process armed with setae at distal outer corner. Outer flagellum very robust, clearly separated into subsegments, each subsegment with rounded inner margin armed with 2 rows of tight setae (Fig. 1B).

Antennal scale lanceolate, nearly 5 times as long as the maximum width, extending beyond distal end of antennular peduncle for 0.75 of its length, setose all round except for proximal 40% of outer margin. Outer distal edge of naked margin with 4 spines that gradually increase in length (Fig. 1C). Peduncle slightly shorter than scale but considerably longer than antennular peduncle, 3-segmented, 1st segment very short, 3rd segment about half length of 2nd. Sympod with one spine at base of scale (Fig. 1C).

Mandible with strong lacinia mobilis; palp large and slender, 3-segmented, 1st segment shortest, 2nd segment about twice as long as 3rd (Fig. 1D). Labrum symmetrical, pentagonal, wider than long, without frontal spiniform process (Fig. 1E). Maxillule with 7 spines and 1 seta on outer lobe. These spines bear small spinules on margins. Inner lobe with 7 setae, apical 3 large and plumose (Fig. 1F). Maxilla with distal segment of endopod longer than wide, densely setose on inner margin and scarcely setose on outer margin; proximal segment with 4 setae on inner margin; exopod large, with 26 setae on margin (Fig. 1G).

First thoracopod small and robust, without exopod; endopod with short preischium and dactylus, ischium, merus and carpopropodus similar in length; dactylus with 3 long plumose spines on distal margin, carpopropodus bearing single, long plumose spine on inner margin, merus with 5 plumose spines on inner margin, ischium with 5 shorter plumose spines on inner margin, preischium and basis with plumose setae but not spines on inner margins (Fig. 1H). Second thoracopod robust, endopod with 1 spine on outer margin of ischium, inner margin produced into very large lamellar lobe armed with many simple setae, preischium shortest, merus longest with expanded inner distal part, dactylus with long and slender nail (Fig. 2A). Third to 5th thoracic endopods long and slender, forming minute chelate structure terminally, but concealed by crown of long setae (Fig. 2B). Endopod of 3rd thoracopod with carpopropodus unsegmented and about equal to merus in length (Fig. 2C). Endopod of 5th thoracopod with carpopropodus longer than merus and divided in 2 subsegments by oblique articulation, proximal subsegment very short (Fig. 2D). Sixth to 8th thoracic endopods long and slender, dactylus and nail together forming long slender claw. Endopod of 8th thoracopod with carpopropodus separated into 3-subsegments by oblique articulations, proximal subsegment very short but 2nd shortest, merus longer than carpopropodus; penis cylindrical (Fig. 2E). Thoracic exopods distal to basal plate 9-segmented in 2nd limb, and 10-segmented in 3rd to 8th limbs; 1st segment longest.

Sixth pleonite about 1.7 times as long as 5th.

Pleopods developed, biramous. First pleopod with exopod 9-segmented, endopod unsegmented, expanded distally, not reaching distal end of 1st segment of exopod (Fig. 2F). Second pleopod (Fig. 2G) with 7-segmented exopod, 1st segment thick, 2nd segment extended, provided with 2 short simple setae and one strong spinous seta that is spinulose in distal part. This spinous seta extending beyond distal end of exopod. Endopod 9-segmented, 1st segment thick and long (Fig. 2G, H). Third pleopod with both rami 9-segmented (Fig. 2I). Fourth pleopod with 9-segmented exopod; 8-segmented endopod, 1st segment very long, almost reaching distal end of 3rd segment of exopod (Fig. 3A). Fifth pleopod with 9-segmented exopod; endopod unsegmented, almost reaching 6th segment of exopod (Fig. 3B).

Uropods slender, long. Endopod without statocyst, slightly extending beyond distal

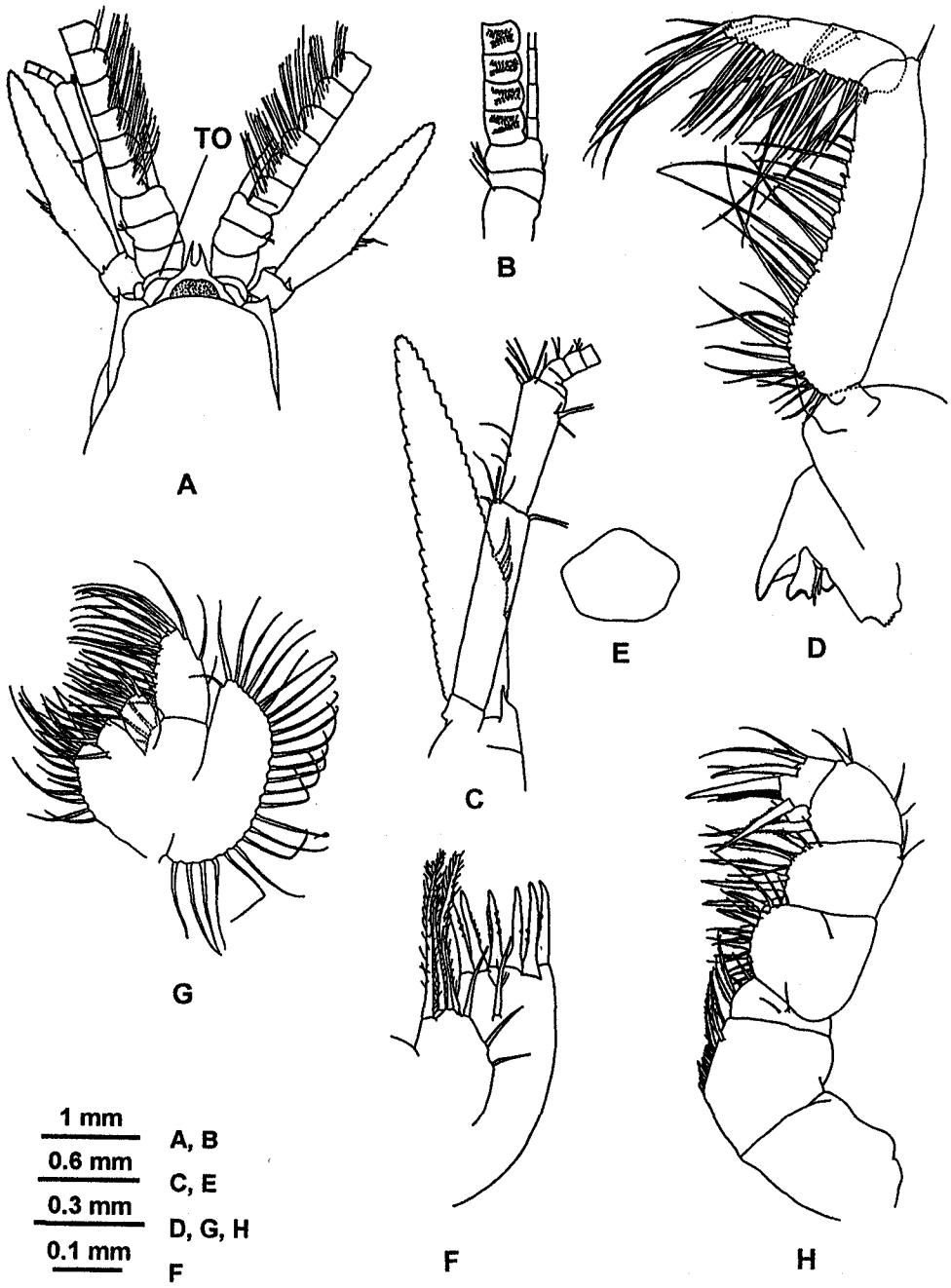


Fig. 1. *Hansenomysis japonica*, new species. Holotype, adult male. A, anterior part in dorsal view; B, antennular peduncle in ventral view; C, antenna; D, mandible; E, labrum; F, maxillule; G, maxilla; H, 1st thoracopod. Abbreviation, TO: Tattersall organ.

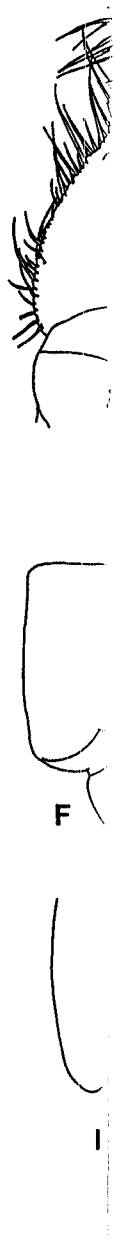
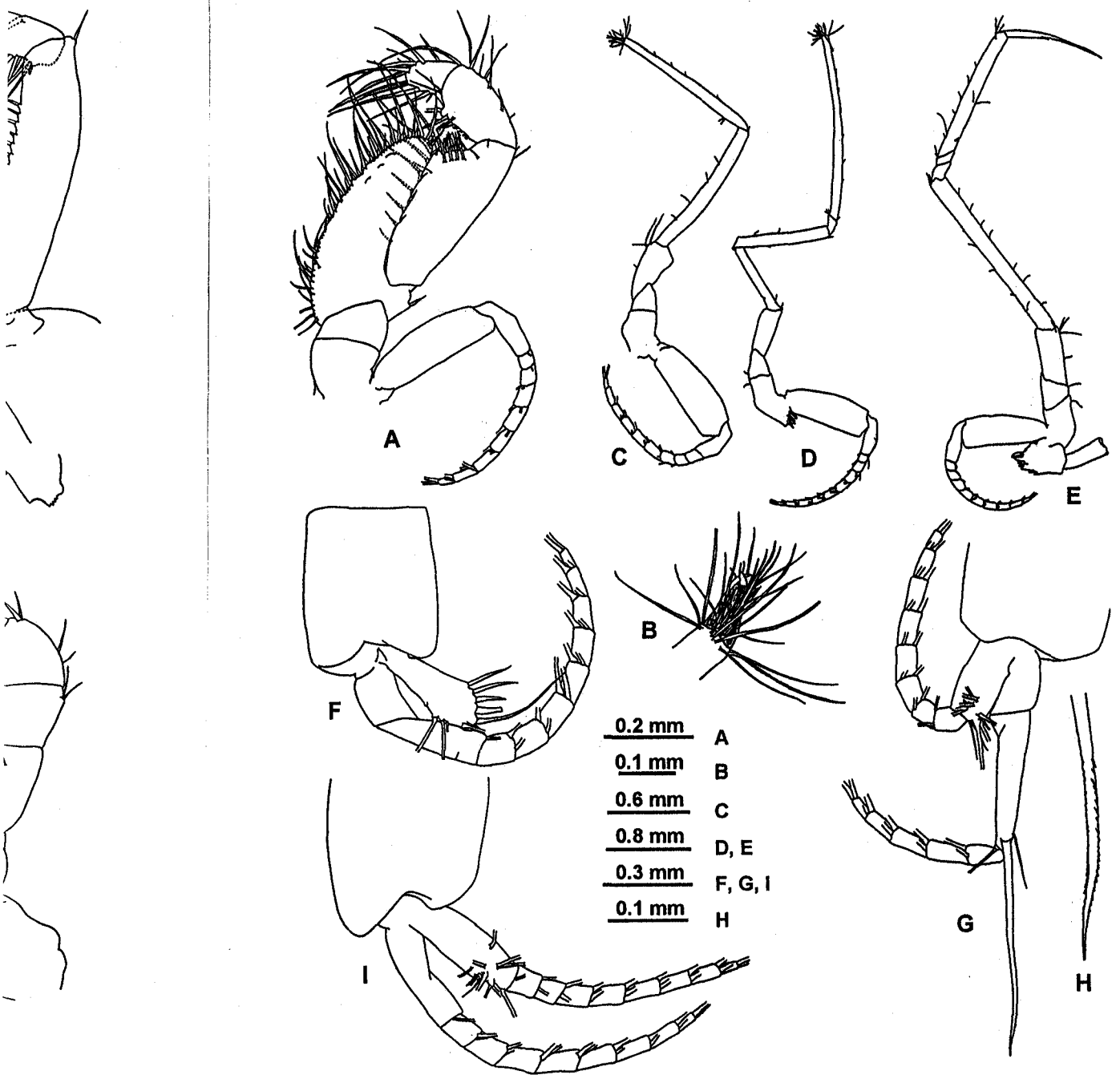


Fig. 2. *H*
of 3rd thora
pleopod; H,



dorsal view; B, maxilla; H, 1st

Fig. 2. *Hansenomysis japonica,* new species. Holotype, adult male. A, 2nd thoracopod; B, chela of endopod of 3rd thoracopod; C, 3rd thoracopod; D, 5th thoracopod; E, 8th thoracopod and penis; F, 1st pleopod; G, 2nd pleopod; H, distal part of modified seta on exopod of 2nd pleopod; I, 3rd pleopod.

edge of telson, 2-segmented, 1st segment 4.5 times longer than 2nd, which is lanceolated, setose all round without spines on inner margin. Exopod shorter than endopod, 2-segmented, 1st segment about 6 times longer than 2nd, armed in distal half of outer margin with 2 small, regularly spaced spines, and 3–4 closely set spines near distal end. The latter spines lengthen gradually towards extremity, inner margin setose, 2nd segment setose all round (Fig. 3C).

Telson entire (Fig. 3C), long and narrow, almost 3 times longer than 6th pleonite and about 4.2 times as long as broad, distal third tapered posteriorly in 3 steps, each step marked by strong spine; between these spines a series of 3–6 smaller spines. Remainder of lateral margin armed with 11–12 small spines regularly spaced, proximal 0.2 of lateral margin unarmed (Fig. 3C). Apex without plumose setae, truncate with 9 spines, central spine about same length as outermost spines; penultimate pair of terminal spines longest; two pairs of smaller spines on each side of central spine. Marginal spines moderately barbed (Fig. 3D).

Etymology.—The species name "japonica" refers to the collecting locality.

Remarks.—*Hansenomysis japonica* closely resembles *H. violacea* in general body form, but is easily distinguishable from it by the long acute horns of the eyeplate, the narrower antennal scale, the segmented carpopropodus of the endopod of the eighth thoracopod, and the longer and narrower telson. With *Hansenomysis armata* Birstein & Tchindonova, 1958, *H. lucifugus, H. rostrata,* and *H. violacea,* the new species is the fifth species of the genus recorded from the Pacific Ocean (Table 1).

?*Hansenomysis lucifugus* (Faxon, 1893)
Fig. 3E–G

Scolophthalmus lucifugus.—Faxon, 1893: 219; 1895:226, pl. LV, fig. 1.—Illig, 1930:556.—W. M. Tattersall, 1951:243.

Material.—Immature female 14.3 mm, 14 May 1995, Sagami Bay (35°05.9′N, 139°32.0′E), 742 m, sledge net.

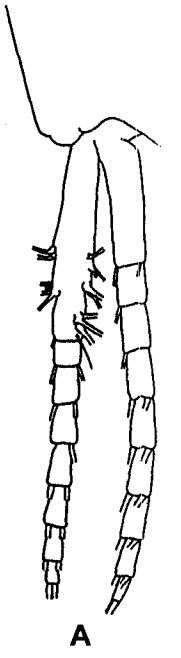
Remarks.—*Hansenomysis lucifugus* was established by Faxon (1893) without illustrations, but a later redescription (Faxon 1895) included illustrations. His descriptions and illustrations, however, are brief, so that we cannot compare the present immature specimen with his type specimen. The following characters of the present specimen agree well with those of the type specimen: (1) carapace is produced to form an acute rostrum, anterolateral margins armed with two spines, one behind the external margin of the antennule, the other at the anterior inferior angle; (2) eyeplate bears two "spines"; (3) antennal peduncle with second and third segments about equal in length (Fig. 3E); (4) endopod of uropod slender with distal end extending beyond the telson and exopod (Fig. 3F). A difference is found in the fifth female pleopod. In the original description it is two-segmented whereas in the present our juvenile specimen it is unsegmented (Fig. 3G).

Hansenomysis lucifugus closely resembles *Hansenomysis rostrata*; they are the only two *Hansenomysis* species having the anterior margin of frontal carapace produced in an acute rostrum. *Hansenomysis rostrata,* however, differs from the former species in the telson which is ovate in shape and which does not bear large spines on the central region of apex.

Distribution.—Hitherto known only from the type locality, eastern Pacific off Galapagos. This is the first record of *Hansenomysis lucifugus* for Japan and western Pacific, if the identification is correct.

Key to species of the genus *Hansenomysis*
(Modified from Băcescu 1971)

1. Carapace with spines 2
   Carapace without spines 6
2. Posterolateral angles of pleonites produced in form of spine-like processes 3
   Posterolateral angles of pleonites not



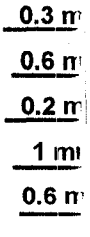


Fig. 3. *Hansc*
uropod and telson
in dorsal view; F

Bay (35°05.9′N,
ɛ net.
is lucifugus was
3) without illus-
ɜcription (Faxon
ns. His descrip-
wever, are brief,
: the present im-
type specimen.
of the present
hose of the type
ɪroduced to form
lateral margins
e behind the ex-
ıule, the other at
e; (2) eyeplate
ıtennal peduncle
ents about equal
lopod of uropod
:tending beyond
ɜ. 3F). A differ-
female pleopod.
ı it is two-seg-
ɜent our juvenile
l (Fig. 3G).
closely resem-
a; they are the
ecies having the
l carapace pro-
. *Hansenomysis*
rom the former
is ovate in shape
ge spines on the

nown only from
'acific off Gala-
ɪrd of *Hanseno-*
ınd western Pa-
correct.

s *Hansenomysis*
scu 1971)

..... 2
..... 6
leonites pro-
ke processes
..... 3
pleonites not

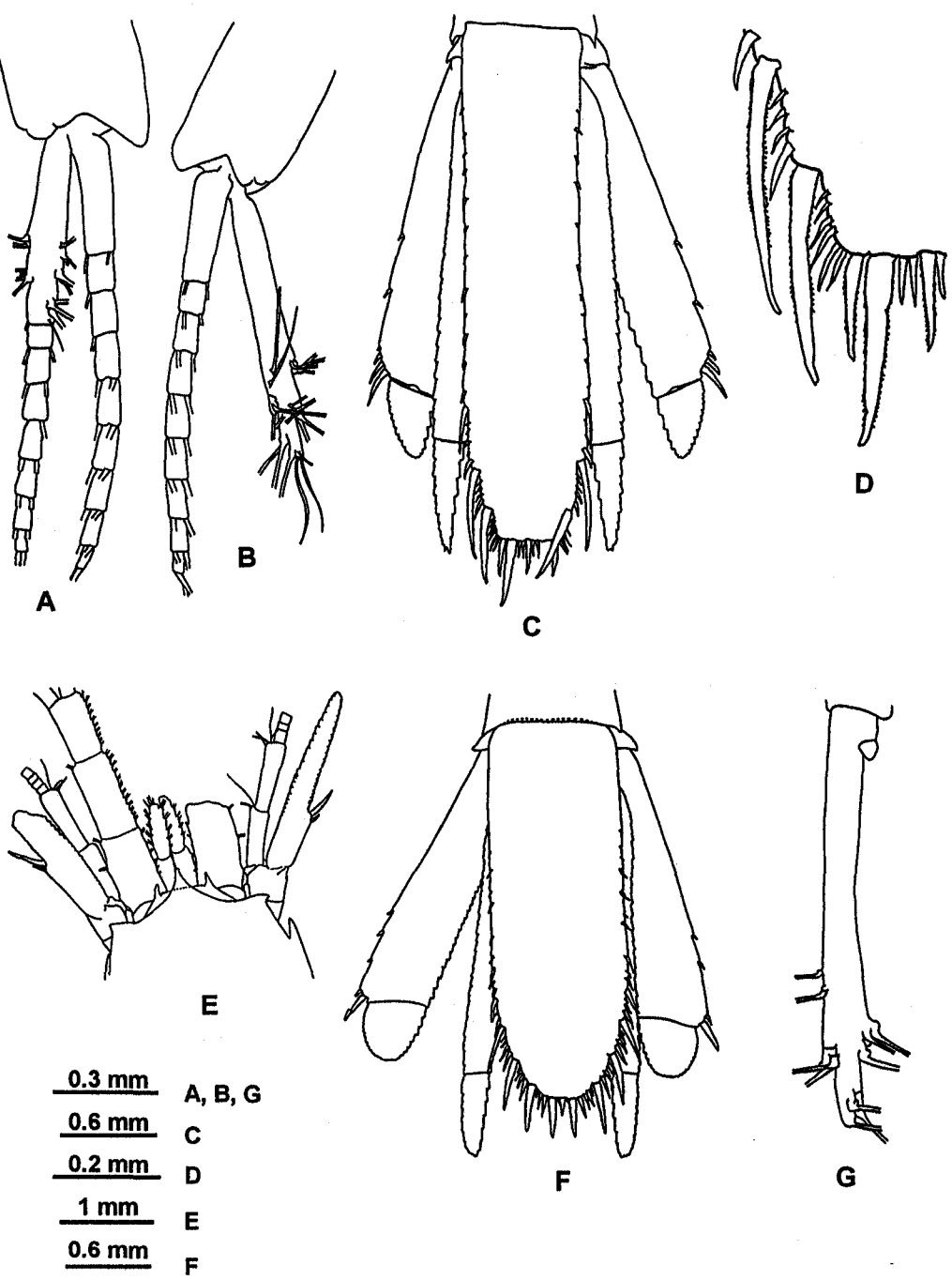


Fig. 3. *Hansenomysis japonica,* new species. Holotype, adult male. A, 4th pleopod; B, 5th pleopod; C, uropod and telson; D, apex of telson. ?*Hansenomysis lucifugus* (Faxon, 1893). Immature female. E, anterior part in dorsal view; F, uropod and telson; G, 5th pleopod.

produced in form of spine-like processes 4

3. Eyeplate with 2 lateral processes .... *H. menziesi* Băcescu, 1971
Eyeplate with 1 central process .... *H. nouveli* Lagardère, 1983

4. Outer margin of antennal scale with spines located among setae ..... *H. armata* Birstein & Tchindonova, 1958
Outer margin of antennal scale without spines located among setae 5

5. Outer margin of antennal scale with 11–15 spines. Telson ovate .... *H. antarctica* Holt & Tattersall, 1906
Outer margin of antennal scale with 17–23 spines. Telson long and narrow .. *H. angusticauda* O. S. Tattersall, 1961

6. Eyeplate with anterolateral or median horns or processes 7
Eyeplate straight frontally or with weak lateral or median emargination 12

7. Anterolateral or median horns or processes of eyeplate not acute 8
Anterolateral or median horns or processes of eyeplate acute 9

8. Apex of telson rounded and narrow. Outer margin of antennal scale with spines located among setae .... *H. falklandica* O. S. Tattersall, 1955
Apex of telson broadly rounded. Outer margin of antennal scale without spines located among setae .... *H. violacea* ..... (Birstein & Tchindonova, 1958)

9. Apex of telson somewhat rectangular with truncate apex. Carapace without rostral projection 10
Apex of telson rounded. Carapace with or without rostral projection 11

10. Antennal scale shorter than peduncle. Outer margin of exopod of uropod unarmed except for 2 spines confined near distal suture *H. tropicalis* Băcescu, 1967
Antennal scale longer than peduncle. Outer margin of exopod of uropod armed ..... *H. japonica* new species

11. Outer margin of antennal scale without spines located among setae. Carapace with rostral projection .. *H. lucifugus* ..... (Faxon, 1893)
Outer margin of antennal scale with spines located among setae. Carapace without rostral projection ....*H. pseudofyllae* Lagardère, 1983

12. Outer margins of antennal scale and exopod of uropod with spines located among setae .... *H. fyllae* (Hansen, 1887)
Outer margins of antennal scale and exopod of uropod without spines located among setae 13

13. Distalmost spine of outer margin of antennal scale and of exopod of uropod extending beyond apices of respective lamina. Outer margin of exopod of uropod with 8 spines ..... *H. chini* ..... Băcescu, 1971
Distalmost spine of outer margin of antennal scale and of exopod of uropod not extending beyond apices of respective lamina 14

14. Outer margin of exopod of uropod with less than 10 spines 15
Outer margin of exopod of uropod with more than 10 spines. Exopod of uropod longer than endopod .... *H. carinata* ..... Casanova, 1993

15. Apex of telson rounded and narrow. Antennal scale with spines on distal half of outer margin .... *H. spenceri* ..... Băcescu, 1971
Apex of telson broadly rounded. Antennal scale with spines on proximal half of outer margin ..... *H. rostrata* ..... Birstein & Tchindonova, 1970

Acknowledgments

One of the authors, MB, wishes to extend his most sincere thanks to the Ministry of Education, Science, Sports and Culture of Japan for granting to him the opportunity, by means of a fellowship, of carrying out the present study.

Literature Cited

Băcescu, M. 1967. Further mysids from the Pacific Ocean collected during the XIth cruise of R/V "Anton Bruun", 1965.—Revue Roumaine de Biologie, Série de Zoologie, 12(3):147–159.

———. 1971. Contributions to the mysid Crustacea from the Peru-Chile Trench (Pacific Ocean).—Anton Bruun Report 7:1–24.

Birstein, Y. A., & Y. G. Tchindonova. 1958. The deep sea mysids of the northwest Pacific Ocean.—Trudy Instituta Okeanologii, Akademiya Nauk SSSR 27:258–355.

———. 1970. New mysids (Crustacea, Mysidacea)

from the Ku
stituta Okean
Casanova, J.-P. 199
idacés Lopho
midae) de la
moire d'Mus
156(0):33–53
Czerniavsky, V. 18
primis Imper
Petersburg N
pls. 1–31.
Faxon, W. 1893. R
off the west
Galapagos, t
the Gulf of
Agassiz, car
sion Steaner
Commander
ing. Prelimin
Crustacea.—
parative Zool
———. 1895. Rep
coasts of Me
and off the
California in
ried on by th
"Albatross"
Crustacea.—
parative Zool
Hansen, H. J. 1887
lands Fauna
Videnskabeli
istrisk Foren
2–7, 1 map.

from the Kuril-Kamchatka Trench.—Trudy Instituta Okeanologii 86:277–291.

Casanova, J.-P. 1993. Crustacea Mysidacea: les Mysidacés Lophogastrida et Mysida (Petalophthalmidae) de la région néo-calédonienne.—Mémoire d'Muséum national d'Histoire naturelle 156(0):33–53.

Czerniavsky, V. 1883. Monographia Mysidarum Imprimis Imperii Rossici. *in* Transactions of St. Petersburg Naturalists' Society, 18(3):1–102 + pls. 1–31.

Faxon, W. 1893. Reports on the dredging operations off the west coast of Central America to the Galapagos, to the west coast of Mexico, and in the Gulf of California, in charge of Alexander Agassiz, carried on by the U.S. Fish Commission Steaner 'Albatross', during 1891, Lieut.–Commander Z. L. Tanner, U.S.N., Commanding. Preliminary descriptions of new species of Crustacea.—Bulletin of the Museum of Comparative Zoology 24:217–220.

———. 1895. Reports on an exploration off the west coasts of Mexico, Central and South America, and off the Galapagos Islands to the Gulf of California in charge of Alexander Agassiz, carried on by the U.S. Fish Commission Steamer "Albatross" during 1891. XV. The stalk-eyed Crustacea.—Memoirs of the Museum of Comparative Zoology 18:1–292.

Hansen, H. J. 1887. Oversigt over det vestlige Grönlands Fauna af Malakostrake Havkrebsdyr.—Videnskabelige Meddelelser fra Dansk Naturistrisk Forening i Kjøbenhevn 9:5–226, tables 2–7, 1 map.

Holt, E. W. L., & W. M. Tattersall. 1906. Preliminary notice of the Schizopoda collected by H.M.S. 'Discovery' in the Antarctic region.—The Annals and Magazine of Natural History, Ser. 7, 17(97):1–11.

Illig, G. 1930. Die Schizopoden der Deutschen Tiefsee-Expedition.—Deutschen Tiefsee-Expedition 1898-1899, 22(6):1–229.

Lagardère, J.-P. 1983. Les Mysidacés de la plaine abyssale du golfe de Gascogne I. Familles des Lophogastridae, Eucopiidae et Petalophthalmidae.—Bulletin d'Muséum national d'Histoire naturelle, Paris, 4e sér, 5, section A, n° 3:809–843.

Mauchline, J., & M. Murano. 1977. World list of the Mysidacea, Crustacea.—Journal of the Tokyo University of Fisheries 64(1):39–88.

Murano, M., & E. E. Krygier. 1985. Bathypelagic mysids from the northeastern Pacific.—Journal of Crustacean Biology 5(4):686–706.

Stebbing, T. R. R. 1893. A history of Crustacea.—International Science Serie of London 74:1–466.

Tattersall, O. S. 1955. Mysidacea.—Discovery Reports 28:1–190.

———. 1961. Report on some Mysidacea from the deeper waters of the Ross Sea.—Proceedings of the Zoological Society of London 137(4):553–571.

Tattersall, W. M. 1951. A review of the Mysidacea of the United States National Museum.—The United States National Museum, Bulletin 201: 1–292.

Sagar, P. M. & Eldon, G. A. 1983. Food and feeding of small fish in the Rakaia River, New Zealand. N. Z. Jl mar. Freshwat. Res., 17:213- 226.

Schoener, T. W. 1970. Nonsynchronous spatial overlap of lizards in patchy habitats. Ecology, 51(1/3):408-418.

Sibert, J. R. 1981. Intertidal hyperbenthic populations in the Nanaimo estuary. Mar. Biol., 64:259-265.

Sokal, R. R. & Sneath, P. H. A. 1973. Principals of numerical taxonomy. San Francisco, W.H. Freeman. 359p.

Sorbe, J. C. 1981. Rôle du benthos dans le régime alimentaire des poissons démersaux du secteur sud Gascogne. Kieler Meeresforsch. Sonderh., 5:479-489.

Strauss, R. E. 1979. Reability estimates for Ivlev's electivity index, the forage ratio, and a proposed linear index of food selection. Trans. Am. Fish. Soc., 108:344-352.

Subrahmanyam, C. B. & Coultas, C. L. 1980. Studies on the animal communities in two North Florida saltmarshes. III. Seasonal fluctuations of fish and macroinvertebrates. Bull. mar. Sci., 30(4):790-818.

Thorman, S. 1982. Niche dynamics and resource partitioning in a fish guild inhabiting a shallow estuary of the Swedish West Coast. Oikos, 39:32-39.

Thorman, S. & Wiederholm, A. M. 1983. Seasonal occurrence and food resource use of an assemblage of nearshore fish species in the Bothnian Sea, Sweden. Mar. Ecol.-Prog. Ser., 10:223-229.

Thorman, S. & Wiederholm, A. M. 1986. Food, habitat and time niches in a coastal fish species assemblage in a brackish water Bay in the Bothnian Sea, Sweden. J. expl. mar. Biol. Ecol., 95:67- 86.

Wakabara, Y.; Tararam, A. S. & Flynn, M. N. 1993. Importance of the macrofauna for the feeding of young fish species from infralittoral of Arrozal-Cananéia lagoon estuarine region (25°02'S-47°56'W) - Brazil. Bolm Inst. oceanogr., S Paulo, 41(1/2):39-52.

Zander, C. D. 1979. On the biology and food of small-sized fish from the North and Baltic Sea areas. II. Investigation of a shallow stony Ground off Mon, Denmark. Ophelia, 18(2):179-190.

Zaret, T. M. & Rand, A. S. 1971. Competition in tropical stream fishes: support for the competitive exclusions principle. Ecology, 52(2):336-342.

(Manuscript received 11 June 1996; revised 11 August 1996; accepted 16 October 1996)